Paper 302102 Physical Chemistry 3 Credits, 75Marks(45 Hrs)

3 Hrs/Week

I)Thermodynamics: I 15Hrs

Definition of Thermodynamic Terms: System, Surrounding types of systems, intensive and extensive properties. Thermodynamic process, concept of heat ad work. Work done in reversible and irreversible process, concept of maximum work (Wmax), Numerical problems.

First law of thermodynamics: Statement, Definition of internal energy and Enthalpy. Heat capacity,heat capacities at constant volumepressure and their relationship. Calculation of W, q, du and dH for the expansion ideal gas under isothermal and adiabatic conditions for reversible process, Numerical problems, Hess's law of heat Summation and its application.

II)Thermodynamics: II 20Hrs

Second law of thermodynamics: Need for law, different statement of law.

Carnot Cycle and its efficiency, Numerical Problems.Carnot Theorem.

Concept of Entropy: Definition, Physical significance, entropy as a State Function, Entropy change in physical change, Entropy as criteria of Spontaneity & Equilibrium Entropy change in ideal gases. Gibbs and Helmholtz Function: Gibbs Function (G) and Helmholtz Function(A) as Thermodynamic Quantities. A and G as criteria for Thermodynamic Equilibrium and spontaneity, their Advantages over Entropy change. Variation A with P, V and T

III)Chemical Equilibrium: 10Hrs

Equilibrium Constant and Free Energy. Thermodynamics Derivation of law of Mass Action.LeChatliers's Principle.Reaction Isotherm and Reaction IsoCore.Clapeyron Equation, Clausius- Clapeyron Equation and its Application.